



Environmental Remediation Group

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SENT VIA ELECTRONIC MAIL TO [morash.melanie@epa.gov](mailto:morash.melanie@epa.gov)

October 2, 2020

Melanie Morash  
Project Manager  
U.S. EPA Region 1 – New England, Mail Code 7-4  
5 Post Office Square  
Boston, MA 02109-3912

Dear Ms. Morash,

Olin Corporation (Olin) respectfully submits the attached comments on the August 2020 Olin Chemical Superfund Site Proposed Plan (the Plan) as part of the public comment process. Olin appreciates the opportunity to comment on the Plan and hopes that these written comments will be considered in the United States Environmental Protection Agency's (USEPA's) decisions concerning the final remedial actions for Operable Unit 1 and Operable Unit 2 and interim remedial actions for Operable Unit 3, as well as during the preparation of the corresponding Record of Decision (ROD).

The referenced comments are provided in Attachment A to this letter. This attachment includes separate GENERAL and SPECIFIC COMMENTS. For each category, the comments are numbered sequentially, and we have specified the text, table, or figure that is the subject of the comment.

Olin looks forward to continued collaboration with the USEPA and the Massachusetts Department of Environmental Protection as we work towards finalizing the appropriate remedial decisions for the Site.

Thank you for your consideration.

A handwritten signature in black ink, consisting of a large, stylized 'J' followed by a horizontal line that extends to the right.

James Cashwell  
Director, Environmental Remediation

Attachment

cc: Chinny Esakkiperumal (Olin)  
Libby Bowen (Wood)  
Nelson Walter (Wood)  
Mike Murphy (Wood)

## **ATTACHMENT A**

# **OLIN COMMENTS ON THE AUGUST 2020 OLIN CHEMICAL SUPERFUND SITE PROPOSED PLAN**

## GENERAL COMMENTS

General Comment 1. We note that specific details of the design for several of the remedial alternatives will depend on pre-design investigations. These pre-design investigations will be used to 1) decide the location and number of groundwater and DAPL extraction wells, 2) select treatment equipment to be used in the groundwater and DAPL treatment systems, and 3) delineate areas of soil and sediment that exceed PRGs and require remediation. Olin will work closely with USEPA in the planning and implementation of these pre-design investigations.

## SPECIFIC COMMENTS

For Specific Comments, excerpts from the USEPA's August 2020 Proposed Plan are included, and the specific language that is the subject of the comment is underlined for clarity where appropriate.

**Specific Comment 1.** Page 1, Cleanup Proposal Snapshot, second bullet.

Proposed Plan text:

- Construct and operate a new extraction system to capture contaminated groundwater and Light Non-Aqueous Phase Liquid (LNAPL) flowing into the surface waters referred to as the East, South, and Off-Property West Ditch Streams, which includes multi-phase extraction (MPE) wells to extract groundwater, LNAPL, and soil vapor; and treat the recovered LNAPL via oil/water separation, the soil vapor via granular activated carbon (GAC), and the captured groundwater via the same treatment system as for highly contaminated groundwater;

Comment: *Please note that LNAPL is not currently flowing into any surface water bodies. The currently operating groundwater and LNAPL extraction and treatment system (otherwise known as "Plant B") was constructed in 1981 to prevent migration of LNAPL into the East Ditch Stream. Based on routine inspection, Plant B is operating successfully and as intended, and LNAPL has not been observed in the East Ditch Stream. As a point of clarification, there is no LNAPL (or any other non-aqueous phase liquids) present within the vicinities of the South Ditch, On-Property West Ditch, or Off-Property West Ditch Streams, and there has been no observation of these types of materials in any of these other Site features to date.*

**Specific Comment 2a and 2b.** Page 2, First bullet.

Proposed Plan text:

- Construct and maintain a multi-layer impermeable cap over the feature known as the “Containment Area” on the Property to prevent leaching and prevent unacceptable ecological risks;

*Comment 2a: This comment is being provided to clarify the language used in the Proposed Plan specifying that the cap will be “impermeable” vs. the low-permeability cap described in the OU1/OU2 Feasibility Study (FS). A low-permeability cap, as detailed in the OU1/OU2 FS, will be constructed over the Containment Area, and the final details of the cap will be determined in the Remedial Design to meet the objectives of the FS and meet ARARs.*

*Comment 2b: Several investigations conducted to-date have shown that there is no reasonable likelihood of contaminants leaching at unacceptable levels from the Containment Area. This was demonstrated through analysis of samples collected as part of the 2019 Containment Area Investigation and is supported by historical data. The 2019 investigation was designed to target those areas that were most likely to exhibit elevated levels of impacts based on the historical understanding and accounting of remedial activities conducted previously in the area. In addition, human health risk evaluation has not identified unacceptable health risk for foreseeable land uses that will not be restricted or prohibited by institutional controls. While we do not disagree with the need for a cap, we believe that concerns about leaching are not supported by the available data.*

**Specific Comment 3.** Page 4, A Closer Look at EPA’s Proposed Cleanup Approach, second paragraph.

Proposed Plan text:

The Commonwealth of Massachusetts has classified groundwater in the area of the Site as a “high use and value” drinking water supply.

*Comment: As a point of clarification, in its September 21, 2010 Use and Value Determination, the Commonwealth of Massachusetts identified only portions of the groundwater impacted by the Site as current or potential future drinking water source areas which meet the criteria for Category GW-1 groundwater. This includes areas within the delineated Zone II of the public water supply wells and areas within 500 feet of private drinking water wells. The Use and Value Determination indicates that “the remainder of*

*the Site groundwater is classified as GW-2/GW-3.” The GW-2 and GW-3 classifications are neither current nor potential future drinking water source areas. This is consistent with both MassDEP documentation as well as the Town of Wilmington’s Groundwater Protection Plan.*

**Specific Comment 4.** Page 4 and 5, Interim Action – Dense Aqueous Phase Liquid (DAPL) and Groundwater Hot Spots (GWHS), first paragraph and first two bullets.

Proposed Plan text:

EPA’s preferred alternative for the interim DAPL and Groundwater Hot Spots cleanup is Alternative DAPL/GWHS-3 – DAPL Extraction (Approx. 20 Wells)/Groundwater Hot Spot Extraction Targeting 5,000 nanograms/Liter (ng/L) NDMA (Approx. 6 wells), On-Site Treatment at New Treatment System, as described in the FS report, which includes the following:

- Construction and operation of a DAPL extraction system, conceptualized with four wells in the Off- Property Jewel Drive DAPL pool, four wells in the Containment Area DAPL pool, and 12 wells in the Main Street DAPL pool; and
- Construction and operation of a groundwater extraction and treatment system, conceptualized with six wells targeting the 5,000 ng/L NDMA contour, to remove and treat the mass of contaminants in groundwater hot spots.

Comment: *USEPA has indicated a potential need to extract “hot spot” groundwater from immediately above the DAPL pools as part of this proposed alternative. We note that current data, albeit limited, does not support the presence of a significant NDMA hot spot immediately above the pools such that it should be targeted by this alternative. The referenced data is admittedly from a single well point, and the current data gaps investigation will build a more robust data set to verify current conditions.*

*Additionally, we believe that extraction of groundwater immediately above the DAPL pools will likely exacerbate current conditions by causing convection of DAPL which is only slightly heavier than water. Significant experience gained from operation and monitoring of the Off-Property West Ditch DAPL extraction system indicates that effective, gravimetric DAPL recovery will result in the progressive, planar drawdown of the DAPL/Diffuse Layer interface such that well screens placed immediately above the DAPL pools will become stranded and thus rendered ineffective as DAPL is removed from an individual pool. We strongly believe that DAPL extraction wells can serve more efficiently to remove both DAPL and hot spot groundwater in way that optimizes remedial efforts over time. As*

*DAPL is removed from the various pools, the geochemical characteristics of adjacent groundwater will likely improve, and the DAPL extraction wells can be used to remove any significant NDMA mass that may remain within the pools prior to shut down. We understand that additional work must be completed to more fully define current conditions and the resulting data will be used to ultimately define the appropriate remedial strategy.*

**Specific Comment 5.** Page 5, Interim Action – DAPL and GWHS, second bullet and following sub-bullets

Proposed Plan text:

- On-site treatment of extracted DAPL and hot spot groundwater in a new treatment system generally consisting of the following methodologies:
  - Treatment for DAPL:
    - Lime precipitation to remove metals, with subsequent dewatering and off-site disposal of the liquids and sludge materials;
    - Evaporation of the remaining water and off-site disposal of the residual solids; and
    - Additional treatment as described for highly contaminated groundwater, below.
  - Treatment for highly contaminated groundwater:
    - Influent equalization tank;
    - Hypochlorite flash mixer (a rapid mixer that uniformly distributes a treatment chemical) for oxidation and removal of metals (iron and manganese);
    - Breakpoint chlorination to treat ammonia;
    - Slow mix flocculation (a process by which fine particulates are caused to clump together) and lamella clarifier (a series of inclined plates on which particulates can settle) to remove solids;
    - Filter press for solids dewatering;
    - GAC to ensure clarity and ultra-violet (UV) transmittance, as well as remove volatile organic compounds (VOCs);
    - UV photo-oxidation for NDMA destruction; and
    - Discharge of treated water.

*Comment: Although the Plan accurately reflects the initial assumptions related to the unit operations required to successfully treat DAPL and impacted groundwater, these assumptions will have to be verified through extensive treatability, and possibly, pilot-scale studies. The expected treatability studies will be conducted as part of the pre-design investigations and will determine, in large part, which unit operations will be required. In addition, the pre-design investigations and the Remedial Design will identify the most appropriate location for the new treatment system, which may not be on the 51 Eames Street property, and the alignment of associated conveyance piping and appurtenances.*

**Specific Comment 6.** Page 10, second paragraph.

Proposed Plan text:

Since 1981, Olin has operated a groundwater recovery/treatment system ("Plant B") to address a petroleum spill (see preceding discussion) and prevent the subsequent seepage of LNAPL into East Ditch Stream, located at the eastern perimeter of the Property. The LNAPL is a process oil that contains bis-2-ethylhexylphthalate (BEHP), n-nitrosodiphenylamine (NDPA), and TMPs.

*Comment: The available information indicates that LNAPL present in the subsurface is the result of a release of rubber process oil #415 from storage tank #6 (a raw material for chemical manufacturing) in the former Plant B tank farm that was located in the area of the current Plant B treatment building. The LNAPL is present because of the release of rubber process oil and not present as the result of a petroleum spill (specifically, not a fuel oil spill).*

*As a point of clarification, the process oil #415 LNAPL has been contaminated by historical, co-located releases of bis-2-ethylhexylphthalate (BEHP), n-nitrosodiphenylamine (NDPA), and TMPs. The process oil itself did not contain these constituents. This information is included in Figure 1.3-2, Table 1.4-1, and text of Section 1.4.2.2 of the 2015 OU1/OU2 Remedial Investigation Report.*

**Specific Comment 7.** Page 16, Human Health Risks, fourth bullet.

Proposed Plan text:

- Benzo(a)pyrene in surface water in Off-Property West Ditch Stream could result in unacceptable risks to trespassers through dermal contact.

*Comment: The available Benzo(a)pyrene (B(a)P) analytical data for groundwater, soil, and surface water and the topography of the 51 Eames Street property and the area*

*immediately to the west of the property indicate that the B(a)P detection (a concentration of 4.2 µg/L in one surface water sample collected from the Off-Property West Ditch Stream) did not originate from the 51 Eames Street property.*

- *Data indicate no B(a)P migration in groundwater from the 51 Eames Street property to the Off-Property West Ditch Stream*
  - *Groundwater samples associated with shallow groundwater monitoring wells in the vicinity of the Off-Property West Ditch Stream do not contain any substantial concentrations of B(a)P or the other high molecular weight polycyclic aromatic hydrocarbon (PAH) compounds that were detected in at least one of the Off-Property West Ditch Stream surface water samples (e.g. benzo(a)anthracene, benzo(a)anthracene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, fluoranthene, indeno(1,2,3-cd)pyrene, and phenanthrene). The limited presence and distribution of these very low water-soluble compounds makes it highly unlikely that B(a)P present in Site soils dissolved into surrounding groundwater and migrated to the surface water of the Off-Property West Ditch Stream.*
  - *Lower molecular weight PAH compounds (more soluble in water) were not detected in the surface water samples or in groundwater in the vicinity of the Off-Property West Ditch Stream.*
  - *The detection of only high molecular weight, water insoluble PAH compounds in surface water strongly suggests the PAHs are associated with suspended particulate matter in the surface water samples. Migration of particulate-associated high molecular weight PAHs is a highly unlikely migration mechanism and the groundwater data indicate this pathway is not present.*
- *The topography of the 51 Eames Street property and the area immediately to the west of the property indicate that overland migration of B(a)P contained in surface soil from the property via stormwater runoff to the Off-Property West Ditch Stream does not occur.*
  - *The On-Property West Ditch runs along the western property boundary and receives runoff from the property. This ditch conveys the surface runoff south to the confluence with the on-property South Ditch Stream that flows to the east.*
  - *Immediately to the west of the property boundary, ground surface elevation increases by approximately seven to ten feet where the elevated inactive Pan Am Railway tracks are located. Those tracks run north to south along the property boundary and an elevated unpaved roadway continues south from the area of the South Ditch weir to the entrance to the Calcium Sulfate Landfill. The elevated railroad tracks and unpaved roadway are a barrier for any overland stormwater flow from the property to the Off-Property West Ditch Stream.*



*In addition, the OU1/OU2 Baseline Human Health Risk Assessment (HHRA) results indicate that there could be unacceptable risk to trespassers who might wade in the Off-Property West Ditch Stream. The HHRA cancer risk is contributed primarily by the surface water exposure point concentration of B(a)P of 2.3 µg/L. The exposure point concentration is based on the 95% Upper Confidence Limit on the mean concentration for six surface water samples collected from the Off-Property West Ditch Stream. B(a)P was not detected in two samples and was detected at a concentration below the human health Preliminary Remediation Goal (PRG) of 0.9 µg/L in three other surface water samples. B(a)P was detected at a concentration above the human health PRG of 0.9 µg/L in only one of the six samples. That single sample result (4.2 µg/L) was the difference between having estimated cancer risk above the CERCLA limit and having a cancer risk below the CERCLA cancer risk limit.*

*Additional sampling and analysis of surface water for B(a)P and other PAHs would be beneficial in determining with more confidence what the representative concentrations are in surface water of the Off-Property West Ditch Stream.*

*Further, since the data indicate the source of B(a)P concentrations in the surface water is not the 51 Eames Street property, it would be beneficial to consider other possible sources. Such sources may include potential leaching of PAHs from creosote-treated railroad ties from the adjacent rail line or stormwater runoff from the area to the west of the Off-Property West Ditch Stream, as has been documented in other locations. For example, the United States Geological Survey (USGS) document “Concentrations of Polycyclic Aromatic Hydrocarbons (PAHs) in Urban Stormwater, Madison, Wisconsin, 2005–08, Open-File Report 2009–1077” indicates that urban stormwater contains an almost identical suite of PAH compounds to the surface water samples from the Off-Property West Ditch Stream. Assuming the PAH signature of the urban stormwater reported in this USGS document is typical, it is quite possible that stormwater runoff from the area to the west and northwest of the Off-Property West Ditch Stream is the source of B(a)P in surface water samples from that stream. It is recommended that stormwater runoff into the stream as a source of B(a)P be considered in the pre-design activities concerning surface water of the Off-Property West Ditch Stream.*

**Specific Comment 8.** Page 16, Private Wells, first paragraph, fifth sentence.

Proposed Plan text:

As noted above, 26 private residential wells are in use near the Site, screened within the bedrock contaminant plume. NDMA has been found in varying concentrations in these wells, with the majority of sampling events yielding non-detectable levels of NDMA.

Eighteen wells are monitored regularly – on a quarterly basis – to confirm that levels of NDMA do not exceed 47 ng/L (see Human Health Risks, above), which would result in unacceptable risk to human health based on cancer health effects. NDMA detections in 16 of these wells fall within EPA’s health-protective range, with 72% of samples (438 out of 608 samples) showing non-detectable levels of NDMA. Two of the 18 wells have shown consistently higher levels of NDMA over time, with detections ranging from non-detectable to 33 ng/L. Sampling in the fall of 2017 yielded NDMA results of 56 and 57 ng/L in these two wells; all subsequent sampling results for these wells have been lower – ranging from non-detectable to 3.7 ng/L. Olin has provided bottled water to these two residences since 2010 and is in the process of working with the Town of Wilmington to voluntarily extend a waterline to these households.

*Comment: The following text is a more accurate description of the topic described in the highlighted sentences above: In the Draft Baseline Human Health Risk Assessment (BHHRA) for OU3, human health risks were evaluated for the private residential wells that are monitored regularly using USEPA risk assessment methods and procedures approved by USEPA Region I (November 1, 2018 letter from USEPA to Olin Corporation, Approval of Revised Human Health Risk Calculations for Potable Use of Private Residential Wells at 19 and 23 Cook Avenue – Olin Chemical Superfund Site (“OU3”). The BHHRA concluded that continued use of the 18 private wells within the vicinity of the site does not pose unacceptable health risk (meet CERCLA risk criteria). Two of the eighteen residential wells have shown consistently higher levels of NDMA over time than other residential wells, with detections generally less than 15 ng/L and average concentrations well below the risk criteria of 47 ng/L. Olin is in the process of working with the Town of Wilmington to voluntarily extend a waterline to the two households with consistent detections referenced above.*

*In 2017, two residential wells exhibited anomalous NDMA results of 56 and 57 ng/L. These elevated detections were in one of the wells referenced above, where NDMA concentrations are consistently higher than other wells, and one well where NDMA concentrations are typically low or non-detect. These wells were resampled upon review of data (generally 2 weeks following data receipt), and NDMA concentrations in the resamples were below laboratory analytical detection limits or well below the applicable USEPA risk criteria. All previous and subsequent sampling results for these two locations have been well below the NDMA risk criterion of 47 ng/L.*

